COMPARISON OF CLINICAL CHARACTERISTICS AND HEALTH CARE UTILIZATION AMONG INDIVIDUALS WITH HEMOPHILIA A AND B IN THE HEMOPHILIA UTILIZATION GROUP STUDIES (HUGS) COHORTS

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INTRODUCTION

- Numerous studies in the last decade suggest greater clinical differences between hemophilia A (HA) and hemophilia B (HB) than previously appreciated.
- Bleeding episodes in persons with HB may be less severe, occur with less frequency, result in less arthropathy and require fewer orthopedic surgeries than in hemophilia HA.[1-4]
- National U.S. and Canadian surveillance reports demonstrate a lower use of prophylaxis among HB than HA.[5,6]
- Findings have been inconclusive, due to lack of epidemiologic evidence and the low incidence of HB.

OBJECTIVE

- To evaluate clinical and treatment differences among persons with HB and HA in the United States, using two multi-state cohort studies, the Hemophilia Utilization Group Studies Parts Va (HUGS Va) and Vb (HUGS Vb).

METHODS

- In 2005-2007 and 2009-2012, persons with factor VIII or IX deficiency were enrolled in HUGS Va (HA) and HUGS Vb (HB) from six and ten federally supported Hemophilia Treatment Centers (HTCs) respectively.
- The HTCs provide comprehensive care to patients in eleven states (California, Colorado, Indiana, Massachusetts, Michigan, Mississippi, Montana, Ohio, Texas, Washington and Wyoming).
- Of 477 individuals recruited in two studies, data from 355 individuals with at least 3 participant follow-up surveys and completed follow-up clinician chart and dispensing records were included in the analyses.
- In both studies, participants or parents of pediatric enrollees completed regularly scheduled surveys, supplying information on health care utilization, treatment regimen, joint pain and motion limitation, socio-demographic and clinical characteristics.
- Twenty-four months of follow-up data were collected for bleeding episodes, outpatient procedures and visits, hospitalizations, emergency room (ER) visits and factor utilization.
- Self-reported joint pain was measured by a question that assessed pain on a five-point scale. Self-reported limitation in Joint Range of Motion (JROM) was measured by a question that assessed limitation of motion on a four-point scale.
- Annualized bleed rate (ABR) was calculated from two-year participant-reported bleeding episodes and defined as number of bleeding episodes per year.
- The comparisons between two study cohorts, HA vs. HB, were assessed using Chi-square or Fisher's Exact tests for categorical variables, and Wilcoxon-Mann-Whitney tests for continuous variables.

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Table 1: Sociodemographic and Clinical Characteristics

Characteristics	Hemophilia A (N=243)	Hemophilia B (N=112)	Total (N=355)	P Value*
Age (Mean±SD)	21.3±15.2	22.1±17.6	21.6±16.0	0.91
Adults (≥18 years old)	33.2±12.4	37.9±15.0	34.7±13.3	0.09
Children (2-17 years old)	9.4±4.5	9.5±3.8	9.4±4.3	0.76
Adults (≥18 years old), N (%)	121 (49.8%)	50 (44.6%)	171 (48.2%)	0.37
Race/Ethnicity, N (%)				0.42
White/non-Hispanic	170 (70.0%)	70 (62.5%)	240 (67.6%)	
Black/non-Hispanic	10 (4.1%)	8 (7.1%)	18 (5.1%)	
Hispanic	32 (13.2%)	18 (16.1%)	50 (14.1%)	
Asian/Pacific Islander	15 (6.2%)	5 (4.5%)	20 (5.6%)	
Others ‡	16 (6.6%)	11 (9.8%)	27 (7.6%)	
Employment, N (%) £				0.16
Full-time	105 (43.2%)	53 (47.3%)	158 (44.5%)	
Part-time	54 (22.2%)	15 (13.4%)	69 (19.4%)	
Unemployed/Retired	84 (34.6%)	43 (38.4%)	127 (35.8%)	
Household Income, N (%) £				0.82
≤ $20,000	41 (18.6%)	19 (18.3%)	60 (18.5%)	
$20,001 to $39,999	51 (23.1%)	29 (27.9%)	80 (24.6%)	
$40,000 to $74,999	54 (24.4%)	24 (23.1%)	78 (24.0%)	
≥ $75,000	75 (33.9%)	32 (30.8%)	107 (32.9%)	
Hemophilia Severity, N (%)				<0.01
Severe	169 (69.5%)	55 (49.1%)	224 (63.1%)	
Moderate/Mild	74 (30.5%)	57 (50.9%)	131 (36.9%)	
Using Prophylaxis, N (%)	110 (45.3%)	34 (30.4%)	144 (40.6%)	<0.01
Adults using Prophylaxis	39 (32.2%)	12 (24.0%)	51 (29.8%)	0.28
Children using Prophylaxis	71 (58.2%)	22 (35.5%)	93 (50.5%)	<0.01
HIV/AIDS	35 (14.4%)	4 (3.6%)	39 (11.0%)	<0.01
HCV	92 (37.9%)	23 (20.5%)	115 (32.4%)	<0.01

Abbreviations: SD – standard deviation, HIV/AIDS – human immunodeficiency virus/acquired immunodeficiency syndrome, HCV – hepatitis C virus A
* P-values were calculated from Chi-square (or Fisher Exact) tests for categorical variables or Wilcoxon-Mann-Whitney tests for continuous variables;
£ Data do not add up to N=355 because of missing data;
‡ *Others include: American Indian, Alaskan Native and others*

Figure 1a: Self-reported Joint Pain (Adults)

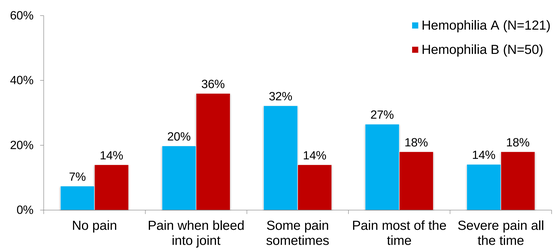


Figure 1b: Self-reported Joint Pain (Children)

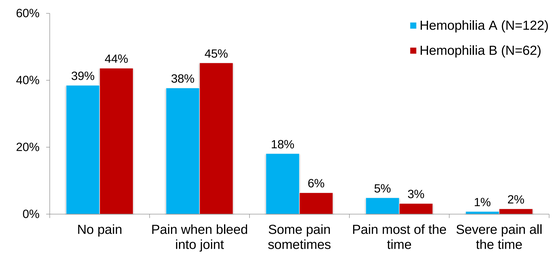


Figure 3a & 3b: Mean Annualized Bleed Rate (ABR) by Prophylaxis and On-Demand

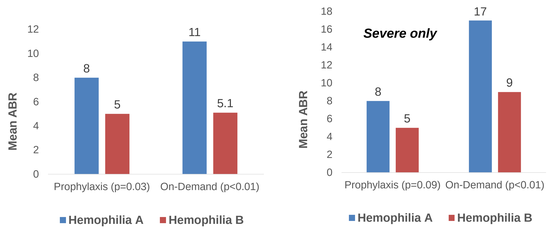


Figure 2a: Self-reported Limitation in JROM (Adults)

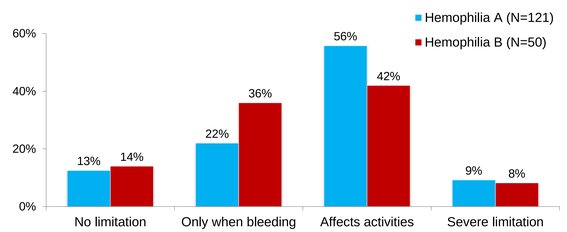


Figure 4: % Severe Patients on Prophylaxis

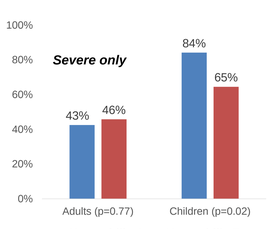
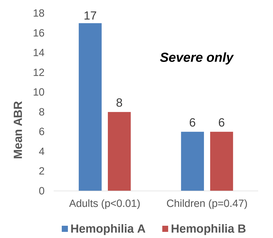
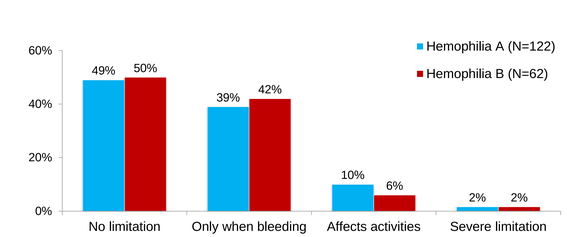


Figure 5: Mean ABR Adults vs. Children*



* Including both prophylaxis and on-demand

Figure 2b: Self-reported Limitation in JROM (Children)



RESULTS

- Of 355 individuals in the analyses, 68% had HA and 52% were children. Both groups displayed similar socio-demographic characteristics (Table 1). Seventy percent with HA and 49% with HB had severe hemophilia.
- Self-reported joint pain was significantly different among the two groups (p=0.02): twice as many adults with HB (all severities) reported no pain compared to adults with HA (Figure 1a & 1b).
- Motion limitation affecting activities was higher in severe HA adults (65%) compared to HB adults (46%).
- Regardless of age group, severity and treatment regimen, persons with HA had significantly higher mean ABR than HB counterparts (9±10.5 vs. 5±6.5, p<0.01)
- The mean ABR among all ages and severities treating episodically was nearly two times higher in HA than HB (p<0.01) (Figure 3a).
- Among children with severe disease, a significantly (p=0.02) larger proportion with HA (84%) infused prophylactically versus HB (65%). There was no significant difference between the adults cohort (Figure 4).
- Adults with severe HA had significantly higher mean ABR than HB counterparts, regardless of treatment regimen (p<0.01). Children had similar mean ABR between HA and HB (Figure 5).
- HA adults had more frequent ER visits (p=0.02) than HB adults.
- Both adults (p<0.01) and children (p=0.04) with severe HA had higher annual factor usage than HB counterparts.
- There were no differences found among children with HA versus HB in ABR, hospitalizations, or ER visits.

CONCLUSIONS

- HUGS V HA and HB cohorts shared similar socio-demographic characteristics but displayed differing clinical outcomes, treatment practices and levels of healthcare utilization across disease severities and age groups.
- These findings add to the body of evidence that HB may be less clinically severe than HA.

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